Nucleic Acid Hybridization

Edited by B.D. Hames and S.J. Higgins

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The multitude of techniques originated and developed during the past two decades for quantitative analyses of nucleic acid hybridization have played a key role in the remarkable progress currently achieved in our understanding of gene structure and function, recombination research and technology, and molecular biology in general. Applications to clinical diagnosis of genetic and other diseases are now widespread.

This compact collective volume is not only an excellent laboratory manual of all the major basic procedures currently employed in molecular hybridization. It is simultaneously backed up by a sufficient theoretical background to enable even those new to the field to appropriately orientate themselves as to the optimal conditions required in specific experiments, or possible modifications for defined aims. The book is replete with detailed directions for conducting hybridization in solution, on filters, under the electron microscope, or in situ.

Two chapters are devoted to the applications of nucleic acid hybridization in the analysis of RNA and recombinant DNA, and another to the preparation of nucleic acid probes. The latter also describes the more recent development of non-radioactive probes for detection of both DNA and RNA, which are of obvious advantage, especially in the clinical laboratory.

An extensive chapter on quantitative analysis of hybridization in solution provides not only the necessary framework for interpretation of the experimental data, but also the theoretical background for application of a computer program to analyses of DNA-DNA and RNA-DNA annealing. The necessary detailed computer program is described in one of the Appendices.

The reader will find of equal interest the Introduction, and Chapter 1 on 'Hybridization Strategy', by pioneers in the field, Edwin Southern, and Roy Britten and Eric Davidson, respectively.

Finally, the Appendices include one which presents a list of restriction enzymes, another on nucleic acid size markers, and a third listing names and addresses of suppliers of reagents and equipment referred to in practical applications throughout the text.

The editors (and the contributors) are to be commended for the organization of a text which packs so much useful information in such a small handbook; and the publishers for the aesthetic presentation of the contents. The high standard of this volume is in line with that of others previously published in this 'Practical Approach Series'; and the price of the paperback edition is such that the laboratory worker need not be restricted to access to a library copy.

David Shugar